Amendment No. 4

Date: 05.06.2015

Subject: Amendment no. 04 to the Tender Enquiry Document

Ref: (i) Tender Enquiry No.: HLL/PCD/GBPH/01/14-15 dated 30.03.2015 (Event No. 3000000206) and subsequent amendments published thereafter.

The following amendments are issued with respect to the above tender Enquiry Document.

Section I
Notice Inviting Tenders(NIT)

For

Sl. No.	e- Tender Ref. No. (Event No.)	Equipment Name	Total Quantity	EMD Details (Rs.)
1	3000000206	Medical Gas Pipeline System	1	17,28,000.00

Read As

Sl. No.	e- Tender Ref. No. (Event No.)	Equipment Name	Total Quantity	EMD Details (Rs.)
1	3000000206	Medical Gas Pipeline System	1	14,03,000.00

TECHNICAL AMENDMENTS

Ref:HLL/PCD/GBPH/01/14-15

Medical Gas Pipe Line System for G. B. Pant Hospital, Port Blair

1. **Existing specifications-**

Para : The system comprises of
1. **Oxygen Generation**, Oxygen supply system with automatic control panel and emergency manifold.

Read as:
Para : The system comprises of
1. Oxygen**manifold** supply system, emergency manifold with automatic changeover and **provision should be there for future connection of LMO line to main Oxygen line.**

2. **Added Para:** (Under Bidder Responsibility) **Bidder shall mention the Unit price and Country of Origin of the Items mentioned in the Bill of Quantity of the Tender. The final payment will be made on as per actual consumption.**

3. **Added Para:** (Under Bidder Responsibility)**Bidder shall responsible for all consumables requirement like filters, oils, etc for smooth running of the plants and manifolds during the warranty and CMC period.**

4. **Existing specifications-**

Para : 1. OXYGEN SYSTEM
1A. Imported Oxygen Generation/Concentrator Plant
Oxygen Generator/Concentrator Module
Modular system according to ISO10083.
It should be based on Pressure Swing Adsorption (PSA) technology.
It should be fully automated, plug-and-play
It Should standard calibrated to produce 700ltrs/min
It should meets production requirements from 38.5 (95.0%) to 44.5 (90.0%) Nm3/hour
The oxygen supply be continuous and supplied through a single unit. The oxygen should be of medical grade and shall be able to supply through pipeline at 4.1bar pressure.
The oxygen concentrator should be supplied with oxygen surge tank having a capacity 2000 ltrs equipped with pressure gauges to display oxygen pressure.
Purity: (%) 90.0 to 95.0
Flow: (O2 Nm3/hour) 44.5 to 38.5
Air requirements: (Nm3/minute) 8.50 to 8.20
Unit performance +/- 5%
Capacity at 90.0%: 44.5 Nm3/hour
Dew point: Inlet: +3°C

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Outlet: -60°C
Outlet pressure: 4 bar
Inlet pressure requirement: 7.5 bar
Power supply: Oxygen Generator: 240-50 Hz
Power supply: Air Compressor: 440 V /- 50Hz
Oxygen Surge Tank Buffer size: 2000L
Compressor requirements: 8.50 Nm3/min
Operating conditions: Min 5°C - Max 45°C
Operating conditions: Dry and ventilated room
It should have PDP sensor for dryer outlet/generator inlet monitoring.
1no. Medical Air Compressor : Air compressor rotary screw compressor.
The oxygen concentrator should be supplied with compatible medical air compressor system to meet the peak load atmospheric air and pressure requirement. The compressor should be screw type, stationary, silenced package fitted.
1no. External Refrigerant Air Dryer,
1no. Purification Module :The duplexed filter and dryer module shall incorporate high efficiency oil filters, heatless regenerative desiccant dryers, impregnated activated carbon filters and bacteria filters. The delivered air shall be independently verified by a third party for medicinal air, with maximum concentrations of contaminants as listed below:
H2O 67ppm v/v (-46°C atmospheric dew point)
Dry particulates 0.01 mg/m³
Oil (droplet or mist) 0.1 mg/m³
CO 5 ppm v/v
CO2 500 ppm v/v
SO2 1 ppm v/v
NO 2 ppm v/v
NO2 2 ppm v/v
Each dryer tower shall have the water concentration in the delivered air continuously monitored by a dedicated sensor providing an alarm indication for high dew point on the respective dryer as backup to the alarm provided by the hygrometer with digital display. The outlet air pressure shall be regulated through a duplex arrangement of non-relieving pressure regulators and protected from over-pressure by duplex pressure safety valves. The output of the both dryers shall be joined to a common pipe prior to entering the pressure regulators to allow either pressure regulator to be used with either dryer.
Digital Dew Point Display: The purification module shall incorporate a dew point hygrometer with an accuracy of ±1°C in the range -20 to -80°C atmospheric dew point and 4-20 mA analogue output.
Aluminium oxide or palladium wire sensors are not acceptable. An alarm condition shall trigger on the dryer control panel if the dew point exceeds a -46°C atmospheric (67 ppm v/v) set point. Volt-free contacts shall be included to enable the dew point alarm signal (Plant Emergency) to be connected to a central medical gas alarm system and/or building management system (BMS). An additional set of voltfree alarm contacts shall be available on the dew point monitor for connection to an auxiliary alarm.
Filtration system for compressed Air: The feed air quality to the oxygen concentrator should be confirming to ISO8573-1 class 1-4-1 and should have filtration grade of 0.01 micron. The ambient temperature of compressed air should be 5 degree centigrade to 40 degree.

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All vessels in the PSA System (Generator vessels and O2 buffertank) should be compliant with European Pressure Directive Fluid Group 1 (hazardous gases). All vessels should be equipped manometers and safety relief valves approved for Oxygen.

Read as:
Para : Deleted

5. Existing specifications-

Para : 1A.Supply, Installation, Testing and Commissioning of 12+12 Size Oxygen Manifold
It shall be configured with 2 x 12 nos. of class D cylinders and will be suitable to withstand working pressure of 145 Kg/cm2 along with 12 nos. of high-pressure copper annealed tail pipes with end brass adapter suitable for oxygen cylinders and manifold. 12 cylinder manifold bank as left side and 12 cylinder manifold bank as right side complete with 24 nos. of pig tail pipes and 24 nos. of non-return valves. Top frame will comprise of high pressure copper pipes of size 1/2" NB x 15 swg with high pressure brass fittings made of high tensile brass and connections through non- return valves, high pressure copper tail pipes, made of high pressure copper pipe of size 1/4" NB x 15 swg. The design of middle and bottom frames should be provided to fit both round and flat bottom cylinders safely. The manifold must be tested (hydraulically) at 150 bar and necessary test certificates should accompany along with the supply. The manifold system should conform to IS 12827 standard.

Read as:
Para : 1A.Supply, Installation, Testing and Commissioning of 20+20 Size Oxygen Manifold(With Cylinders):
It shall be configured with **2 x 20 nos.** of class D cylinders and will be suitable to withstand working pressure of 145 Kg/cm2 along with **20** nos. of high-pressure copper annealed tail pipes with end brass adapter suitable for oxygen cylinders and manifold. **20** cylinder manifold bank as left side and **20** cylinder manifold bank as right side complete with **40** nos. of pig tail pipes and **40** nos. of non-return valves. Top frame will comprise of high pressure copper pipes of size 1/2" NB x 15 swg with high pressure brass fittings made of high tensile brass and connections through non- return valves, high pressure copper tail pipes, made of high pressure copper pipe of size 1/4" NB x 15 swg. The design of middle and bottom frames should be provided to fit both round and flat bottom cylinders safely. The manifold must be tested (hydraulically) at 150 bar and necessary test certificates should accompany along with the supply. The manifold system should conform to IS 12827 standard.

6. Existing specifications-

Para : 1B.Supply, Installation, Testing and Commissioning of Oxygen Emergency Reserve Manifold - 2 x4 size Manifold:
The Oxygen Emergency Reserve Manifold System shall have 4 cylinder manifold bank as left side and 4cylinder manifold bank as right side complete with 8 nos. pig tail pipes and 8 nos. non return valves.

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The emergency reserve manifold shall provide an uninterrupted supply of medical oxygen from equally sized high pressure cylinder banks via a suitable arrangement of pressure regulators, providing a constant downstream nominal pipeline gauge pressure of 400 kPa. Each cylinder bank shall be fitted with an isolation valve to enable continuity of supply in the event of primary supply failure.

Read as:

Para : 1B.Supply, Installation, Testing and Commissioning of Oxygen Emergency Reserve Manifold - 2 x 8 size Manifold(With Cylinders):

The Oxygen Emergency Reserve Manifold System shall have **08** cylinder manifold bank as left side and **08**cylinder manifold bank as right side complete with **16** nos. pig tail pipes and **16** nos. non return valves.

The emergency reserve manifold shall provide an uninterrupted supply of medical oxygen from equally sized high pressure cylinder banks via a suitable arrangement of pressure regulators, providing a constant downstream nominal pipeline gauge pressure of 400 kPa Each cylinder bank shall be fitted with an isolation valve to enable continuity of supply in the event of primary supply failure.

7. **Existing specifications-**

Para : 3A.Supply, Installation, Testing and Commissioning of Quarterlaplex/Pentaplex 11 bar Medical Air

Plant 5800 LPM (Package unit):

It should fully comply and meet with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) or NFPA-99C. It should be CE/UL approved product. It shall be provided with a copy of the certificate of origin. Plant should have EMC certificate Medical Air Plant of 8.5bar for both 4bar Medical Air 4 Air supply and Surgical Air 7 Air supply. Quarterlaplex/Pentaplex SCREW compressors with duplex drier and filtration,

- 2 x 2500 liters capacity vertical air receiver as per BS 5169:1992
- 2 x air dryer.
- <74 dBA sound pressure level.
- 54mm OD pipe work.

Given MA4 is 100% flow rate requirement and SA7 is 66% flow rate support of the compressors. Two/Three identical compressors screw air compressors should run as primary supply to provide free air delivery of 5800 lpm and the remaining two identical 5800lpm screw air compressors should be secondary supply. Medical quality air shall be delivered at a nominal pressure of 400 kPa (4 bar) or 700 kPa (7 bar) gauge for supply of the hospital medical air system. The medical air plant shall deliver both medical and surgical air, with a minimum total flow rate of 5800 l/min. Compressors shall be directly driven by high efficiency electric motor. Two compressors shall be designated as standby, such that the specified volumetric flow is achieved with two compressors not running. The duty compressors shall be automatically rotated by the plant control system to ensure even wear. Compressors shall be supplied with a block and fin style after cooler with a dedicated quiet running fan to maximize cooling and efficiency. Each compressor shall be fitted with a multi-stage air/oil separator, capable of limiting oil carry over to a maximum of 3 ppm to minimize contamination and maintenance. Each desiccant dryer shall be provided with a dew point sensing switch that shall provide an alarm on the plant control

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panel and central hospital alarm system when the water concentration in the delivered air rises above -26°C atmospheric dew point. A duplex desiccant dryer and filtration module shall be provided with three individual stages of filtration as follows:
Stage 1: Coalescing filter upstream of the desiccant dryer for removing liquid water, oil and oil aerosol down to 0.1mg/cu.m (0.1 ppm) and particles down to 1 micron.
Stage 2: Particulate filter after the desiccant dryer for dust protection, removing particles down to 1 micron.
Stage 3: Bacteria filter for removing particles down to 0.01 micron.
Total air receiver capacity shall be at least 50% of the plant capacity in 1 minute in terms of free air delivered at normal working pressure. Each air receiver shall be protected by a pressure relief valve, afusible plug and include a pressure gauge with isolating valve. The plant control and power management system shall monitor the safe operation of the plant, providing signaling into the alarm system as per the requirements of HTM/ NFPA..

Read as:

Para : 3A.Supply, Installation, Testing and Commissioning of Quarterlaplex or moreMedical Air Plant 5800 or more LPM (Package unit):

It should fully comply and meet with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) or NFPA-99C. It should be CE/UL approved product. It shall be provided with a copy of the certificate of origin. Plant should have EMC certificate Medical Air Plant of 8.5bar for both 4bar Medical Air supply and Surgical Air 7bar supply.
Quarterlaplex or moreSCREW/ **Scroll** compressors with duplex drier and filtration,

- 2 x 2500 liters capacity vertical air receiver as per BS 5169:1992
- 2 x air dryer.
- <74 dBA sound pressure level.
- 54mm OD pipe work.

Given MA4 is 100% flow rate requirement and SA7 is 66% flow rate support of the compressors. Two **or more**identical compressors/**Module** screw/**scroll** air compressors should run as primary supply to provide free air delivery of 5800 lpm and the remaining two identical 5800lpm screw/**scroll** air compressors should be secondary supply. Medical quality air shall be delivered at a nominal pressure of 400 kPa (4 bar) **and** 700 kPa (7 bar) gauge for supply of the hospital medical air system. The medical air plant shall deliver both medical and surgical air, with a minimum total flow rate of 5800 l/min. Compressors shall be directly driven by high efficiency electric motor. Two compressors shall be designated as standby, such that the specified volumetric flow is achieved with two compressors not running. The duty compressors shall be automatically rotated by the plant control system to ensure even wear. Compressors shall be supplied with a block and fin style after cooler with a dedicated quiet running fan to maximize cooling and efficiency. Each compressor shall be fitted with a multi-stage air/oil separator, capable of limiting oil carry over to a maximum of 3 ppm to minimize contamination and maintenance. Each desiccant dryer shall be provided with a dew point sensing switch that shall provide an alarm on the plant control panel and central hospital alarm system when the water concentration in the delivered air rises above -26°C atmospheric dew point. A duplex desiccant dryer and filtration module shall be provided with three individual stages of filtration as follows:
Stage 1: Coalescing filter upstream of the desiccant dryer for removing liquid water, oil and oil aerosol down to 0.1mg/cu.m (0.1 ppm) and particles down to 1 micron.

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Stage 2: Particulate filter after the desiccant dryer for dust protection, removing particles down to 1 micron.
Stage 3: Bacteria filter for removing particles down to 0.01 micron.
Total air receiver capacity shall be at least 50% of the plant capacity in 1 minute in terms of free air delivered at normal working pressure. Each air receiver shall be protected by a pressure relief valve, afusible plug and include a pressure gauge with isolating valve. The plant control and power management system shall monitor the safe operation of the plant, providing signaling into the alarm system as per the requirements of HTM/ NFPA..

8. Existing specifications-

Para : 5A. Supply, Installation, Testing and Commissioning of Duplex AGSS System 1430lpm of 50Hz (Imported):
It should fully comply and meet with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) or NFPA-99C. It should be CE or UL approved product.
Duplex AGSS System -
Twin standalone AGSS pumps of 3 phase 1430 l/min capacity each with built in flow indication and pressure regulation valve. Mounted on single frame with control panel and separate warning label. One pump will be standby with the other in operation. Nominal Motor Power Per Blower 3KW and will be single stage.

Read as:
Para : 5A. Supply, Installation, Testing and Commissioning of Duplex AGSS System minimum 1430lpm of 50Hz (Imported):
It should fully comply and meet with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) or NFPA-99C. It should be CE or UL approved product.
Duplex AGSS System -
Twin standalone AGSS pumps of 3 phase **minimum** 1430 l/min capacity each with built in flow indication and pressure regulation valve. Mounted on single frame with control panel and separate warning label. One pump will be standby with the other in operation. Nominal Motor Power Per Blower 3KW and will be single stage

9. Existing specifications-

Para : 8.Supply, Installation, Testing and Commissioning of Bed Head Panel: CE Marked/UL Listed.
Horizontal Bed Head Panels TYPE-3 (1500MM SIZE) 02 = 2,MA4=2 & VAC = 2 AND 8 NOS. ELECTRIC SWITCH & SOCKET FOR REGULAR SUPPLY and RJ-45=1,

Read as:
Para : 8.Supply, Installation, Testing and Commissioning of Bed Head Panel: CE Marked/UL Listed.
Horizontal Bed Head Panels TYPE-3 (1500MM **or more size**) 02 = 2,MA4=2 & VAC = 2 AND 8 NOS. ELECTRIC SWITCH & SOCKET FOR REGULAR SUPPLY and RJ-45=1,

10. Existing specifications-

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Para : 17.Supply, Installation of electrical panel for oxygen generation plant.

Read as:

Para : Deleted

11. Existing specifications-

Para : 18.Supply, Installation of Servo stabilizer for oxygen generation plant.

Read as:

Para : Deleted

12. Existing specifications-

Para : 19. Civil Construction of Gas Manifold & Plant Room.

Read as:

Para : 19. Civil Construction of Gas Manifold Room and Plant Room (for Air & Vacuum): The all construction is as per site and standards requirement, the drawing should be approved by the client before construction. General electrification shall be responsibility of bidder for manifold and plant rooms, hospital will provide only one 3-phase and one single phase supply at one point only.

13. Existing BOQ-

.No.	**Medical Gas Pipe Line System BOQ and Estimated with Oxygen Generation** Description	Unit	Quantity
	All Medical Gas Pipe Line Products should fully complies and meets with the requirements of the Health Technical Memorandum 02-01, C11 standards of Department of Health of UK OR NFPA-99C. It should be UL Listed or duly CE marked and comply with 93/42/EEC Medical Devices.		
1	**Oxygen system fully complies and meets with the requirements of NFPA-99C, UL Listed and HTM 02-01,C11 standards)**		
*	**Imported Oxygen Generation/Concerntrator Plant complete as per specifications**	Set	1
A	12+12 size manifold with 24 No. pig tail pipe & 24No. non return valves. CE Marked.	Set	1
B	2 x 4 size Cylinder emergency oxygen manifold system. CE Marked.	Set	1
C	Imported Fully automatic oxygen control panel 1500lpm at 60 PSI pressure.	No.	1
D	Imported Oxygen terminal unit.	No.	348
E	Oxygen flow meter with humidifier bottle. CE Marked.	No.	348

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F	Imported Oxygen HP antistatic tube, white	Meters	400
2	**Nitrous oxide system (fully complies and meets with the requirements of NFPA-99C, UL Listed and HTM 02-01,C11 standards)**		
A	2+2 size manifold system for Nitrous oxide with 4 No. pig tail pipes with 4 No. non return valves. CE Marked.	Set	1
B	1x2 size cylinder emergency N2O manifold system with 2 No. tail pipe and 4 Nos. non return valves. CE Marked.	Set	1
C	Imported Fully automatic N2O control panel 500lpm at 60 psi pressure with heater system.	No.	1
D	Imported Nitrous oxide terminal unit	No.	9
E	Imported N2O H.P. tube with antistatic core, French blue.	Meter	50
3	**Imported Medical Air System (fully complies and meets with the requirements of NFPA-99C, UL Listed and HTM 02-01,C11 standards)**		
A	Medical Air Plant 50 Hz Quarterlaplex 11 bar (Package unit) 5800 LPM. • 4 x 22KW each screw air compressor base frame mounted. Two identical air compressors working to produce 5800lpm and 2 identical as stand by. • 3 x 1500 liters capacity vertical air receiver as per BS 5169:1992. • 2 x air dryer. • <74 dBA sound pressure level.	Set	1
B	Imported Duplex Pressure Reducing Station	Set	2
C	Imported Terminal unit (Gas outlet points)		
	MA4 SA7	No. No.	134 9
D	H.P. antistatic tube black	Meters	200
4	**Imported Medical Vacuum Plant fully complies and meets with the requirements of NFPA-99C, UL Listed and HTM 02-01,C11 standards)**		
A	Pentaplex Medical Vacuum Plant of 4100LPM (Package unit): Comprising of Pentaplex rotary vane vacuum pumps (5 x 5.5 kw), 3 as duty and 2 as standby. 5 x 5.5 KW rotary vane vacuum pump base/floor mounted 1350lpm flow rates of each pump). 2 x 2700 liters capacity vertical vacuum receiver tanks. <77 dBA sound pressure level.	Set	1
B	Imported Vacuum terminal units (outlets)	No.	348
C	Ward Vacuum unit. CE Marked	No.	348
D	Imported Theatre vacuum unit	No.	4
E	Imported H.P. antistatic tube (Yellow).	Meter	500
5	**Imported AGSS system (fully complies and meets with the requirements of NFPA-99C, UL Listed and HTM 02-01,C11 standards)**		
A	Imported AGSS (Duplex) plant 1430lpm.	Set	1
B	Imported AGSS outlets	No.	9
C	Imported AGSS hose assembly	No.	9

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D	Imported AGSS remote indicator	No.	9
6	**Medical Grade Bsi Kite Mark Certified BS EN 13348:2008 complies Copper pipe (Outer Diameter Thickness)**		
a	12mm OD x 0.6mm thk	Mtr.	2195
b	15mm OD x 0.7mm thk	Mtr.	7900
c	22mm OD x 0.9mm thk	Mtr.	8100
d	28mm OD x 0.9mm thk	Mtr.	2500
e	42mm OD x 1.2mm thk	Mtr.	1350
f	54mm OD x 1.2mm thk	Mtr.	1250
g	76mm OD x 1.5mm thk	Mtr.	450
7	**Bed Head Panel . CE Marked**		
a	Horizontal Bed Head Panels TYPE-1 (1500MM SIZE) 02 = 1 & VAC = 1 AND 4NOS. ELECTRIC SWITCH & SOCKET FOR REGULAR SUPPLY, RJ-45=1,	No.	33
b	Horizontal Bed Head Panels TYPE-2 (1500MM SIZE) 02 = 1,MA4=1 & VAC = 1 AND 4NOS. ELECTRIC SWITCH & SOCKET FOR REGULAR SUPPLY, RJ-45=1,	No.	63
c	Horizontal Bed Head Panels TYPE-3 (1500MM SIZE) 02 = 2,MA4=2 & VAC = 2 AND 8 NOS. ELECTRIC SWITCH & SOCKET FOR REGULAR SUPPLY, RJ-45=1,	No.	18
8	**Imported Medical Gas Area Line Pressure Alarms (fully complies and meets with the requirements of NFPA-99C, UL Listed and HTM 02-01,C11 standards)**		
a	2 Gases (1 Gas+1 Vac)	No.	18
B	3 Gases (2Gas+ 1 Vac)	No.	12
c	5 Gases (4Gas + 1 Vac)	No.	5
9	**Imported Master Alarm for Gas Plant Room (fully complies and meets with the requirements of NFPA-99C, UL Listed and HTM 02-01,C11 standards)**	Set	1
10	**IMPORTED SINGLE SERVICE AREA VALVE UNIT. (fully complies and meets with the requirements of NFPA-99C, UL Listed and HTM 02-01,C11 standards)**		
a	AREA VALVE SERVICE UNIT FOR OXYGEN	Nos.	37
b	AREA VALVE SERVICE UNIT FOR NITROUS	Nos.	5
c	AREA VALVE SERVICE UNIT FOR MEDICAL AIR	Nos.	18
d	AREA VALVE SERVICE UNIT FOR SURGICAL AIR	Nos.	5
e	AREA VALVE SERVICE UNIT FOR VACUUM	Nos.	36
11	**Imported Line Lockable Valves (fully complies and meets with the requirements of NFPA-99C, UL Listed and HTM 02-01,C11 standards)**		
a	15mm	Mtr.	60
b	22mm	Mtr	40
c	28mm	Mtr	30
d	42mm	Mtr	25

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e	54mm	Mtr	16
f	76mm	Mtr	4
12	Electrical Wiring inside Gas manifold and plant room : Hospital will provide single phase and 3 phase electrical supply with cable at one source in the plant room	Set	1
13	Electrical Wiring inside Oxygen Generation Plant room : Hospital will provide single phase and 3 phase electrical supply with cable at one source in the Oxygen Generation Plant room	Set	1
14	AGSS Wiring from each OT to AGSS pump room	Set	1
15	Electrical control panel for vacuum and air plant	Set	1
16	Electrical control panel for oxygen generation plant	Set	1
17	Servo Stablizer for Oxygen Generation Plant	Set	1
18	Construction of Oxygen Generation Plant Room	Set	1
19	Construction of Gas Manifold and Vacuum & Air Plant	Set	1

Read as:
BOQ :

.No.	Medical Gas Pipe Line System BOQ Description	Unit	Quantity
	All item should be as per specification and standard		
1	**Oxygen system(As per Specification)**		
A	**20+20** size cylinder manifold with **40** No. pig tail pipe &**40**No. non return value, CE marked**(With D type Cylinders) + Extra 40 Cylinders for storage backup**	Set	01
B	2 x **8** size Cylinder emergency oxygen manifold system with tail pipe & non-returnable valve. CE Marked. **(With D type Cylinders) + Extra 16 Cylinders for storage backup**	Set	01
C	Imported Fully automatic oxygen control panel	No.	01
D	Imported Oxygen terminal unit.	No.	348
E	Oxygen flow meter with humidifier bottle. CE Marked.	No.	348
F	Imported Oxygen HP antistatic tube, white	Meters	400
2	**Nitrous oxide system (As per Specification)**		
A	**4+4** size manifold system for Nitrous oxide with **8** No. pig tail pipes with **8** No. non return valves. CE Marked.**(With Cylinders) + Extra 8 cylinders for storage backup**	Set	01
B	**1+1** size cylinder emergency N2O manifold system with 2 No. tail pipe and 4 Nos. non return valves. CE Marked. **(With Cylinders) + Extra 2 cylinders for storage backup**	Set	01
C	Imported Fully automatic N2O control panel	No.	01
D	Imported Nitrous oxide terminal unit	No.	09
E	Imported N2O H.P. tube with antistatic core, French blue.	Meter	50

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3	**Imported Medical Air System (As per Specification)**		
A	Medical Air Plant (5800LPM or More) Package unit	Set	01
B	Imported Duplex Pressure Reducing Station(**MA & SA**)	Set	02
C	Imported Terminal unit (Gas outlet points)		
	MA4 SA7	No. No.	134 09
D	H.P. antistatic tube black	Meters	200
4	**Imported Medical Vacuum Plant (As per specification)**		
A	Pentaplex Medical Vacuum Plant of 4100LPM (Package unit)	Set	01
B	Imported Vacuum terminal units (outlets)	No.	348
C	Ward Vacuum unit. CE Marked	No.	348
D	Imported Theatre vacuum unit	No.	04
E	Imported H.P. antistatic tube (Yellow).	Meter	500
5	**Imported AGSS system(As per specification)**		
A	Imported AGSS (Duplex) plant min. 1430lpm.	Set	01
B	Imported AGSS outlets	No.	09
C	Imported AGSS hose assembly	No.	04
D	Imported AGSS remote indicator	No.	05
6	**Medical Grade Bsi Kite Mark Certified BS EN 13348:2008 complies Copper pipe (Outer Diameter Thickness)**		
A	12mm OD x 0.6mm thk	Mtr.	2195
B	15mm OD x 0.7mm thk	Mtr.	7900
C	22mm OD x 0.9mm thk	Mtr.	8100
D	28mm OD x 0.9mm thk	Mtr.	2500
E	42mm OD x 1.2mm thk	Mtr.	1350
F	54mm OD x 1.2mm thk	Mtr.	1250
G	76mm OD x 1.5mm thk	Mtr.	450
7	**Bed Head Panel . CE Marked**		
A	Horizontal Bed Head Panels TYPE-1 (1500MM SIZE) 02 = 1 & VAC = 1 AND 4NOS. ELECTRIC SWITCH & SOCKET FOR REGULAR SUPPLY, RJ-45=1,	No.	33
B	Horizontal Bed Head Panels TYPE-2 (1500MM SIZE) 02 = 1,MA4=1 & VAC = 1 AND 4NOS. ELECTRIC SWITCH & SOCKET FOR REGULAR SUPPLY, RJ-45=1,	No.	63
C	Horizontal Bed Head Panels TYPE-3 (1500MM **or More** SIZE) 02 = 2,MA4=2 & VAC = 2 AND 8 NOS. ELECTRIC SWITCH & SOCKET FOR REGULAR SUPPLY, RJ-45=1,	No.	18
8	**Imported Medical Gas Area Line Pressure Alarms**		
A	2 Line (1 Gas+1 Vac)	No.	18
B	3 Line (2Gas+ 1 Vac)	No.	12
C	5 Line (4Gas + 1 Vac)	No.	05
9	**Imported Master Alarm for Gas Plant Room**	Set	01
10	**IMPORTED SINGLE SERVICE AREA VALVE UNIT.**		
A	AREA VALVE SERVICE UNIT FOR OXYGEN	Nos.	37

Col (Dr.) R L Gogna (Retd)

B	AREA VALVE SERVICE UNIT FOR NITROUS	Nos.	05
C	AREA VALVE SERVICE UNIT FOR MEDICAL AIR	Nos.	18
D	AREA VALVE SERVICE UNIT FOR SURGICAL AIR	Nos.	05
E	AREA VALVE SERVICE UNIT FOR VACUUM	Nos.	36
11	**Imported Line Lockable Valves**		
A	15mm	Nos.	60
B	22mm	Nos.	40
C	28mm	Nos.	30
D	42mm	Nos.	25
E	54mm	Nos.	16
F	76mm	Nos.	04
12	Electrical Wiring inside Gas manifold and plant rooms : Hospital will provide single phase and 3 phase electrical supply with cable at one source in the plant room	Set	01
13	AGSS Wiring from each OT to AGSS pump room	Set	01
14	Electrical control panel for vacuum and air plant	Set	01
15	Construction of Gas Manifold and Vacuum & Air Plant	Set	01

14. Existing specifications-

Para : (Table Under)Operation and Maintenance of Medical Gas system at G. B. PantHospital, Port Blair

Table –

Sl. No.	Designation	Shift-1 6AM -2PM	Shift -2 2-10 PM	Shift-3 10PM - 6AM	General Shift 8-4 PM	Leave Substitutes	Total
1	Supervisor (Diploma in Mechanical/Electrical)With 5 years Experienceininstallationmaintenance & operationof MGPS				1		1
2	Medical Gas Technicians (Diploma in Mechanical/ Electrical)With 3 yearExperience ininstallation, maintenance& operation of MGPS				3		3
3	Plant operator (SSLC with minimum 4 years experience or ITI withelectrical/fitting/plumbing)With Experience ininstallation maintenance & operation of MGPS	4	3	2		3	12

Col (Dr.) RL Gogna (Retd)

4	Helpers (8th Standard ormore) with minimum 6years experience ininstallation, maintenance& operation of MGPS	4	3	2		3	12
	Salary-per month Supervisor-20000Medical gas technician-14000Plant operator-10000-11000Helpers-7000-8000						

Read as:

Para :(Table Under)Operation and Maintenance of Medical Gas system at G. B. PantHospital, Port Blair

Table –

Sl. No.	Designation	Shift-1 6AM-2PM	Shift-2 2-10 PM	Shift-3 10PM-6AM	General Shift 8-4 PM	Leave Substitutes	Total
1	Supervisor (Diploma in Mechanical/ Electrical) With 3 years Experience in installation maintenance & operation of MGPS				1	1	1
2	Medical Gas Technicians (Diploma in Mechanical/ Electrical) With 2 year Experience in installation, maintenance & operation of MGPS				1		1+1
3	Plant operator (SSLC with minimum 01 year experience or ITI with electrical/ fitting/ plumbing) With Experience in installation maintenance & operation of MGPS	1	1	1		1	4
4	Helpers (8th Standard or more).	1	1	1		1	4
	Salary-per month Supervisor-20000 Medical gas technician-14000 Plant operator-10000- 11000 Helpers-7000-8000						

All other specifications remains unaltered.

Medical Officer

Col (Dr.) RL Gogna (Retd)
Prof & HOD Anaesthesiology